

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20056

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In the Matter of)

Replacement of Part 90 by Part 88 to Revise
the Private Land Mobile Radio Services
and Modify the Policies Governing Them)

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Federal Communications Commission
Office of Secretary

and)

PR Docket No. 92-235

Examination of Exclusivity and Frequency)
Assignment Policies of the Private)
Land Mobile Radio Services)

REPLY COMMENTS OF MOTOROLA

Motorola hereby replies to comments submitted in response to its "Petition for Clarification" ("Petition") of the FCC's *Memorandum Opinion and Order* in the above captioned proceeding.¹ Upon review of the comments, Motorola again urges the FCC to maximize user flexibility to make the most efficient use of their assigned spectrum.

Background: Motorola's Petition sought clarification of the *MO&O* in only one area.

While rejecting arguments calling for the adoption of channeling plans based on 5 kHz channel centers, the FCC noted that it had created "a flexible migration path" for existing users and further stated:²

¹ *Memorandum Opinion and Order*, PR Docket No. 92-235, adopted December 23, 1996, (62 Fed Reg 2027 (1997) [*MO&O*].

² *MO&O* at ¶11.

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[W]e are mindful of the fact that some users may want to implement 5 kHz technology within their existing 25 kHz bandwidth. Such a channelization, however, would require the licensee to deviate from the adopted band plan. Therefore, we will permit frequency coordinators to recommend frequencies inconsistent with the adopted band plan, for any technology, including 5 kHz, provided that such a system will not cause harmful interference to any existing system.

Motorola's Petition supported this additional flexibility on the condition that interference protection is maintained to other existing users. Motorola sought clarification, however, on how this flexibility would be applied to the deployment of technologies other than 5 kHz. Specifically, Motorola noted that licensees seeking to replace a 25 kHz system with two 12.5 kHz systems in the same bandwidth would likely locate the new emitters on frequencies ± 6.25 kHz removed from the existing authorized channel center. In the UHF bands, however, the FCC restricts such channels to a maximum authorized bandwidth of 6.0 kHz, thus potentially negating the opportunity to deploy 12.5 kHz technology.³ While supporting maximum flexibility for users, Motorola's Petition asked the FCC to clarify this tension in its refarming policies and rules.

Comments: Supporting comments to Motorola's Petition were filed by the Industrial Telecommunications Association, Inc. ("ITA"), The American Petroleum Institute ("API"), UTC, the Telecommunications Association ("UTC") and Securicor Radiocom Limited ("Securicor"). In general, these commenters support the concept of user flexibility when interference protection is not compromised.⁴ ITA, for example, endorses Motorola's proposal

³ See, e.g., *Refarming Report and Order* at ¶27.

⁴ Comments of ITA at 2, Comments of API at 3, Comments of Securicor at 2.

and notes that it “would be useful to require users to provide a showing to coordinators demonstrating that the deployment of 2 12.5 kHz emitters does not result in out-of-band emissions more severe than those that occur from a single 25 kHz emitter.”⁵

Likewise, API supports the Motorola position and states that “the FCC should utilize the frequency coordination and type acceptance processes” for monitoring and controlling harmful interference.⁶ API concludes with the view that “if users and manufacturers can demonstrate to the frequency coordinators that the deployment of four 6.25 kHz emitters, two 12.5 kHz emitters, or even five 5 kHz emitters, will not result in more harmful out of band emission than those which occur from a single 25 kHz emitter, that these configurations should be allowable.”⁷ Securicor also supports reliance on the frequency coordination process to “allow broad and robust flexibility in the assignment of channels” and to “allow the assignment of two 12.5 kHz channels in 25 kHz bandwidth.”⁸ Securicor believes that “pursuant to an appropriate technical showing applicants should be given the opportunity to convince the coordinator and ultimately the Commission that its proposed system is acceptable for licensing.”⁹ This,

⁵ Comments of ITA at 2.

⁶ Comments of API at 3.

⁷ *Id.* at 4,5.

⁸ Comments of Securicor at 2.

⁹ *Id.* at 3.

according to Securicor, is true for both shared and exclusive use channels provided the use is compatible with existing users.¹⁰

UTC's comments follow the same general theme stating that it "supports such a clarification provided that the licensee can demonstrate to the Commission that the proposed systems will not result in greater out-of-band emissions than occurs from a single 25 kHz system."¹¹ UTC recommends that licensees seeking to modify their existing 25 kHz technology in this fashion should continue to be licensed with a wideband emission designator at the original center channel. This indication of a frequency division multiplexed station would, according to UTC, "allow coordinators to treat the split channels as if they were a single channel, and will eliminate the need for the FCC to revise, or for applicants to request waiver of, the bandwidth limitations associated with the channels centers."¹² UTC notes that this plan will not permit licensees to use the split channels at different locations and urges that applicants wishing to secure two 12.5 kHz channels at different locations should request licensing on channels that are available under the rules for 12.5 kHz licensing.¹³ UTC points out that this latter recommendation applies similarly to other scenarios of narrowband conversion (i.e., five 5 kHz subchannels in a single 25 kHz channel).¹⁴

¹⁰ *Id.*

¹¹ Comments of UTC at 2,3.

¹² Comments of UTC at 3,4.

¹³ Comments of UTC at 4.

¹⁴ *Id.*

The Association of Public-Safety Communications Officials - International (“APCO”) expressed concern about the issues raised by Motorola in its Petition, pointing out that “on-channel” migration to narrowband technologies offers greater benefits in terms of spectrum efficiency by creating new channels for other users.¹⁵ For that reason, APCO believes that “channel splits should be the exception (requiring a waiver and frequency coordinator approval) and not the rule.”¹⁶ Thus, APCO argues that the Commission should allow the use of two 12.5 kHz channels within a current 25 kHz channel only under the following circumstances: 1) the licensee has exclusive use of its channels pursuant to FCC rules, 2) the licensee meets minimum loading standard requirements for both its current 25 kHz channel and for the new 12.5 kHz channels, 3) the licensee has exclusive use of the adjacent 25 kHz channel or has obtained written concurrence from adjacent channel licensees, and 4) the channel split is approved by the relevant frequency coordinator.¹⁷

Finally, SEA Inc. (“SEA”) opposes the Motorola Petition arguing that the scenario depicted by Motorola was never intended as a refarming transition path. SEA is also concerned about increases in interference and added coordination complexity.

¹⁵ Comments of APCO at 2.

¹⁶ *Id.*

¹⁷ Comments of APCO at 3.

Discussion: For the past 8 years, the Refarming proceeding has been complicated by the myriad of demands placed upon the FCC by the diverse user community of the private land mobile services. What may be an acceptable migration path for one user may not suit the needs of another. The inability to find the “one-size fits all” migration solution has resulted in the need for a flexible approach to encourage spectrum efficient operation.

Therefore, Motorola agrees with the majority of the commenters who support the notion of allowing a user to split a 25 kHz radio system into two 12.5 kHz channels using essentially the same spectrum, ***provided that***, the proposed operation is supported by an appropriate technical showing that is reviewed and approved by the appropriate frequency coordinating committee. Motorola believes that the complexity of the refarming process demands a flexible framework providing the coordinators with the ability make case-by-case frequency recommendations that may vary from the general refarming plan. We agree with the comments of APCO, however, that these 2 x 12.5 kHz “channel splits” should be viewed as the exception rather than the rule, and would therefore support retaining the authorized bandwidth limitation of 6.0 kHz on the 6.25 kHz channels as the general rule for the refarming bands. This would prevent new licensees from routinely implementing systems contrary to the general plan.¹⁸

¹⁸ Motorola believes that the primary beneficiaries of this flexible assignment policy would be large industrial and public safety users covering wide areas using multiple channels. Splitting channels in this fashion would allow such users to realize immediate efficiency gains without having to wait for their adjacent channel spectrum neighbors to reduce channel occupancy. While some operators in the 470-512 MHz band meet this profile, Motorola would oppose APCO’s suggestion that users seeking this flexibility should have exclusive use of the 25 kHz channel. Such a rule would limit this flexibility to the 470-512 MHz band when there may be users in the lower bands that maintain *de facto* exclusivity and for whom this refarming concept makes operational sense.

While a waiver may be the appropriate vehicle for regulating the flexibility sought by this Petition, Motorola would prefer to see a rule that provides coordinators with the ability to recommend existing users to deploy two 12.5 kHz emitters simply after a thorough review of a technical showing depicting the interference effects to other existing users.

UTC's proposal that licensees continue to receive a wideband emission designator is a useful suggestion and, as noted by UTC, would replicate the flexible use provisions currently in place at 800 MHz.¹⁹ UTC's subsequent comment, however, stating that both of the 12.5 kHz systems must remain at the original transmitter location is too restrictive in Motorola's view. In order to minimize inter-system interference, it may be more appropriate at times to separate the two transmitters.²⁰ Motorola acknowledges that separating the base stations brings into question new potentials for increasing interference to other existing users. These may be mitigated, however, by other system modifications such as reduced operating power. Also, in situations where the user has *de facto* control of adjacent channels covering wide areas, such adjacent channel interference issues may not be relevant. Motorola believes, however, that these are issues that can be addressed in the frequency coordination process and should not be prohibited by rule.

¹⁹ See §90.645(f) of the Commission's Rules.

²⁰ On average, Motorola would estimate that a 10-15 mile separation between base stations would be sufficient to minimize inter-system interference effects.

Finally, Motorola disagrees with SEA's view that two 12.5 kHz emitters can not be contained in the same bandwidth as a single 25 kHz emitter (e.g., 20 kHz authorized bandwidth). As stated earlier, similar flexibility is already in place for private land mobile frequencies above 800 MHz. Further, SEA's opposition is premised on the two emitters being placed ± 6.25 kHz from the original channel center. It is not inconceivable that an appropriate "channel split" would place the new carriers on frequencies ± 5.0 kHz from the original channel center further reducing the adjacent channel interference issue.²¹ As for SEA's comment that 12.5 kHz channel splits are not an appropriate refarming transition path, Motorola notes that this scenario is one option for some users to immediately improve their channel capacity without waiting for their adjacent channel neighbors to concurrently reduce occupied bandwidth. As such, it furthers the FCC's goal of encouraging more efficient use of the refarming frequency bands.

²¹ Interestingly, channel splits on frequencies ± 5.0 kHz from the existing channel center -- or on any frequencies other than exactly ± 6.25 kHz -- would require no additional relief from the FCC under the policy articulated in the *MO&O*.

In conclusion, Motorola reiterates its support for the refarming decisions and urges the FCC to continue on pace to implement this ambitious project consistent with the clarifications noted herein. Affording the frequency coordinators with the latitude to recommend non-standard frequency assignments, when appropriate from an interference perspective, will expedite the realization of spectrum efficiency gains through the refarming process.

Respectfully Submitted,


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CERTIFICATE OF SERVICE

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